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# THE FARMER, THE MANUFACTURER AND THE RAILROAD.

BY LOGAN G. MCPHERSON.

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As the heart, the stomach and the lungs are vital and essential parts of the body, so are the processes of agriculture, manufacture and transportation vital and essential to the social organization. It is important that the nourishment absorbed by the body as a whole be distributed to the heart, the lungs and the stomach to renew their tissue and to maintain the energy with which each contributes to the body as a whole. So also is the national welfare promoted by each industry, under justly economical administration, obtaining adequate return over expenditure to provide for effective maintenance and operation, and to attract capital sufficient for its continuance.

It would seem that a comparison has not heretofore been made of the relative parts performed in the material activity of this country by these three factors, and at first glance there would seem to be difficulty in the way of obtaining a comparison adequate for effective deductions.

As, however, the foot is the unit of measure of length and the pound the unit of measure of weight, so, also, in this country the dollar is the unit of measure of value. In every industry—in agriculture, manufacture and transportation—there must be capital, and capital is measured by dollars. There must be expenditure, and expenditure is measured by dollars. There must be gross earnings and net returns, and gross earnings and net returns are measured by dollars. There must be workers in each industry, and their salaries and wages are measured by dollars. With the dollar is measured the value of such dissimilar things as a ton of iron and a physician's visit. That is, if the price of one is twenty dollars and the fee for the other two dollars, their rela-

tive value is ten to one. Likewise, with the dollar can be measured the diverse elements that enter into the industries of manufacture, agriculture, and transportation, which may not be so radically diverse as at first they may seem to be. Although the dollar may not be as inflexible a unit throughout time as the foot or the pound, it is a definite and exact unit of measure of value at any specified time.

The following tables express the measurement by dollars of the value of the intake and the outgo of these three branches of industry. The amounts for the railroad have been ascertained from the reports of the Interstate Commerce Commission for the years 1905, 1900 and 1890; for manufactures, from the census for 1900, the census for 1890 and the special census of manufactures for 1905; for agriculture, from the census for 1900, the census for 1890 and the reports in the Year-Book of the Department of Agriculture for 1905. These latter reports have been analyzed and criticised by statisticians of the Division of Agriculture of the United States census, and subjected to certain modifications in accordance with estimates made by them. In the comparisons based on these tables the returns for 1890 are not used, as the census figures for that year are admittedly incomplete and the statistics of the Interstate Commerce Commission are not so highly developed as for later years. To any one desiring to follow the details that have entered into the compilation of these tables, the writer will be glad to send a complete analysis upon request.

#### *Manufactures.*

	1905	1900	1890
Capital .....	\$13,872,035,371	\$9,817,434,799	\$6,525,156,486
Number of salary and wage-earners.....	6,718,618	5,705,165	4,712,622
Gross value of products	16,866,706,985	13,004,400,143	9,372,437,283
Cost of materials used..	9,497,619,851	7,345,413,651	5,162,044,076
Total salaries and wages	3,623,589,623	2,726,045,110	2,283,216,529
Miscellaneous expenses.	1,651,603,535	1,027,755,778	631,225,035
Net returns from products .....	2,093,893,976	1,905,185,604	1,295,951,643

#### *Railroads.*

Capitalization .....	\$13,805,258,121	\$11,491,034,960	\$9,437,343,420
Number of salary and wage-earners.....	1,382,196	1,017,653	749,301
Gross earnings.....	2,082,482,406	1,487,044,814	1,051,877,632
Cost of materials used.	550,657,472	384,163,670	
Total salaries and wages	839,944,680	577,264,841	692,093,971
Miscellaneous expenses.	75,538,597	53,765,267	
Net earnings.....	616,341,657	471,851,036	359,783,661

<i>Agriculture.</i>			
	1905	1900	1890
Capital .....	\$30,043,000,000	\$22,939,901,164	\$18,082,267,689
Number of farmers and farm laborers. ....	10,900,000	10,381,765	8,565,926
Value of product. ....	5,738,850,000	4,311,372,177	2,933,985,914
Wages paid labor. ....	393,699,000	357,391,930	257,450,387
Fertilizer .....	61,366,300	53,430,910	38,469,598
Taxes .....	225,322,500	172,049,257	135,617,007
Interest on capital at 7 per cent. ....	2,103,010,000	1,605,793,081	1,265,758,738
Net return to farm owners .....	2,945,461,200	2,122,706,999	1,236,690,184

Because of the lack of absolute returns in the case of manufactures and agriculture, deductions cannot be made from the foregoing premises that will be of the clear-cut and exact nature required by an accountant in making up a balance-sheet. To repeat, caution must be most strongly given that the figures in the following comparisons, in the case of manufactures and agriculture, are not to be considered as definite calculations, but rather as indications so veiled with mist that the clear-cut outlines are obscured, but yet allowing sufficient perception of form and quantity to guide the pilot.

From the standpoint of the investor, the standpoint of the man whose money is in a business, a prime consideration is always what is the rate of return on the capital in that business. From the standpoint of the consumer, of the purchaser of commodities and services a prime consideration is the greatest satisfaction that can be obtained for the lowest price. The interest of the nation as a whole is that its citizens should obtain a fair return for their efforts, and should obtain at fair prices the commodities and services which they need. To revert to the simile with which this article began, if the equilibrium of the functions of the body be disturbed, if over-nutrition of one organ lead to the impoverishment of another, if the unduly accelerated functions of one lead to an impairment in the performance of another, there will, if such a condition continue, ultimately result the prostration of the body as a whole. So also it is with the social organism, the body politic.

From the foregoing table we ascertain the following to be the

<i>Net Returns per Each \$1,000 of Capital.</i>			
	1905	1900	
Manufactures .....	\$151	\$194	
Railroads .....	44	41	
Agriculture .....	98	92	

The most extreme modification of the tables consequent upon the completest information would not, in all probability, alter the conspicuous deduction from this comparison. That is, the investor looking for the greatest immediate profit, in either 1900 or 1905, would have turned first to manufactures, then to agriculture and lastly to the railroad. The tremendous development of manufactures and the enormous prosperity of the farming regions of the west confirm this deduction.

If it be claimed that the low net return to the railroads is because of their inflated capitalization, the reply is made that the actual capitalization of the American railroads, including all cases of inflation, is only about fifty-two thousand dollars a mile, which is far less than that of the railroads of any other country. Recent reports of the actual expenditure for construction show that it costs, in this country, to build one mile of railroad from twenty-five thousand dollars over level country, where there are no obstacles, to over one hundred thousand dollars in places of dense population and where construction is difficult. This does not include buildings or equipment. A correct physical valuation of the railroads of the United States would, doubtless, confirm the statements of President Roosevelt, President Hadley and others of high authority that they are not as a whole overcapitalized.

The net returns are what remains of the gross returns after the payment of all expenses. The ratio of these gross returns and expenditures to capital is shown in the following tables:

*Gross Returns per \$1,000 of Capital.*

	1905	1900
Manufactures .....	\$1,216	\$1,324
Railroads .....	150	128
Agriculture .....	191	187

The excessive amount in the case of manufactures is largely due to the fact that, in selling a manufactured product, the manufacturer has to be reimbursed for the cost of all the elements that enter into that product, and these elements in large degree consist of commodities, which, although raw material to the final manufacturer, may be the finished products of intermediate manufacturers. For example, boots and shoes are a product of which manufactured leather is the raw material. Manufactured leather is a product of which tanned hides are the raw material, and raw hides are the raw material of the tanner.

*Total Expenditures per Each \$1,000 of Capital.*

	1905	1900
Manufactures .....	\$1,065	\$1,130
Railroads .....	106	87
Agriculture .....	75	77

In the case of manufactures these expenditures are 88 per cent. of the gross returns, the high ratio being caused by the high value of the products of intermediate manufacture that are included as raw material. The deduction of the value of such partly manufactured products from the gross value of manufactured products eliminates duplication. That is, the value of manufactured leather which appears in the gross value of products as an output of the leather-factory, disappears from the net return of the boot and shoe factory when the value of the raw material used by the boot and shoe factory is deducted from the value of its products.

In the case of agriculture, the expenditures are but 39 per cent. of the gross returns. This is due in part to the fact that the farmer's payment for raw material is low, and in part to the fact that the sun and the rain for which he does not pay are the farmer's most effective instruments.

The expenditure of the railroad is 71 per cent. of the gross returns, thirty-two points higher than the expenditure of agriculture and but seventeen points below the expenditure of manufactures, even although the expenditure account of the railroad for material contains no items similar to the partly manufactured products of manufactures.

Although the labor cost is not the total cost in any industry, it is a most important factor in that total cost, and in the analysis of any business is subject to rigid scrutiny. On nearly every farm, the farmer himself is an active worker, but the census returns do not show separately the farmers and the farm laborers. Therefore the labor cost in the case of agriculture is omitted from the following tables:

*Total Salary-Wage for Each \$1,000 of Capital.*

	1905	1900
Manufactures .....	\$261	\$277
Railroads .....	61	50

In the case of manufactures, labor received 73 per cent. greater return than capital; in the case of railroads labor received 38 per cent. greater return than capital. The ratio of labor cost to capital for the railroad was but 23 per cent. of that for manufactures, while the labor charge of the railroads per dollar of net

returns was but 78 per cent. of that for manufactures. The labor of the railroads, however, is applied through machinery to a far greater degree than the labor of either manufactures or agriculture, the horse-power of the machinery of the railroad exceeding the horse-power of manufactures and agriculture combined. It is, moreover, disclosed by the first of these comparative statements that the capital of manufactures received a net return 107 points higher, or 243 per cent. greater, than that of the railroad. That is, it required to produce one dollar of net returns \$6.62 of capital in the case of manufactures, \$9.44 in the case of agriculture, while it requires \$22.40 of capital in the case of the railroads.

*Average Salary-Wage per Worker.*

	1905	1900
Manufactures .....	\$539	\$477
Railroads .....	607	567

*Total Salary-Wage per Each \$1,000 of Expenditure.*

	1905	1900
Manufactures .....	\$245	\$245
Railroads .....	572	568

*Total Salary-Wage per Each \$1,000 Net Returns.*

	1905	1900
Manufactures .....	\$1,730	\$1,430
Railroads .....	1,362	1,223

The average salary-wage paid by the railroads was 12.6 per cent. greater than the average paid by the manufacturers. The ratio of net return to the wage of the railroad employee was 27 per cent. greater than the ratio of net return to the wage of the manufacturing employee. That is, manufactures paid 27 per cent. more salary-wage to produce \$1,000 net returns than the railroads. The salary-wage required to produce \$1,000 of net returns increased in five years, 21 per cent. for manufacturers and 11 per cent. for the railroads. That the high average salary-wage for the railroads is not caused by the heavy salaries of the administrative officers is shown by the fact that, of the \$839,944,680 paid in 1905 by the railroads in salaries and wages, but \$15,155,278, or 1.8 per cent., went to the general officers. In the aggregate, the high salaries of the presidents are insignificant. It is conspicuous and significant that, of the total expenditure of manufactures, but 24 per cent. was for salary-wage, while of the total expenditure of the railroads, 57 per cent. was for salary-wage.

The tables that are given next cast further light upon the relation of labor to each of the three great branches of industry.

*Number of Workers per \$100,000 of Capital.*

	1905	1900
Manufactures .....	48	58
Railroads .....	10	9
Agriculture .....	36	45

That is, for each \$100,000 of capital manufactures give employment to 380 per cent. more workers than the railroad; agriculture, 260 per cent. more.

*Number of Workers per \$100,000 Net Returns.*

	1905	1900
Manufactures .....	320	291
Railroads .....	224	215
Agriculture .....	370	489

That is, to produce \$100,000 of net returns, manufactures require 43 per cent. more workers than the railroads, and agriculture 65 per cent. more. Not only is the ratio of labor charge to capital less in the case of the railroads, but the number of workers per given amount of capital is vastly less. Although their workers receive a higher average wage, a given amount of net return is produced by the railroads with 70 per cent. of the number of workers required in manufactures, and 60 per cent. of the number required in agriculture.

The comparisons brought out by the preceding tables and the deductions therefrom show that, while the administration of the railroads is far more economical than that of either manufactures or agriculture, the returns to capital are far less. This would indicate that the prices for the product of the railroads—that is, the rates for transportation—are relatively lower than the prices for the products of manufacture and for the products of agriculture. This deduction is borne out by figures which also are obtained from recent publications of the United States Government.

Bulletin No. 65 of the Bureau of Labor, issued July, 1906, contains the results of an investigation into the wages and hours of labor in the manufacturing industries from 1890 to 1905, and of an investigation of the retail prices of food from 1890 to 1905. It states:

“The average wages per hour in 1905 were 18.9 per cent. higher than the average for the ten-year period from 1890 to 1899, inclusive. The average earnings per week were 14 per cent. higher, and the average hours of labor per week were 4.1 per cent. lower.”

The same report says:

"The average prices of wheat, bread, butter, cheese, chickens, cornmeal, eggs, fresh fish, salt fish, milk, mutton and veal were higher in 1905 than in any other year of the sixteen-year period. The advance in bacon since 1896 has been 43.5 per cent.; the advance in Irish potatoes, 43.1 per cent.; the advance in eggs, 41.8 per cent.; the advance in dry or pickled pork, 31.9 per cent.; the advance in fresh pork, 30 per cent.; the advance in flour, 29.3 per cent.; the advance in cornmeal, 28.6 per cent. The advance in food, . . . according to its consumption in the family of the working-man, has been . . . 12.4 per cent., when compared with the average for the ten-year period 1890 to 1899."

Bulletin No. 69 of the Bureau of Labor, issued March, 1907, contains a record of wholesale prices of all commodities from 1890. Taking the average wholesale price from 1890 to 1899, as 100 per cent., this record shows that wholesale prices increased as follows, for 1905: Farm products, 24.2 per cent.; food, etc., 8.7 per cent.; cloths and clothing, 12 per cent.; fuel and lighting, 28.8 per cent.; metals and implements, 22.5 per cent.; lumber and building materials, 27.7 per cent.; drugs and chemicals, 9.1 per cent.; house-furnishing goods, 9.1 per cent.; miscellaneous, 12.8 per cent.; all commodities, 15.9 per cent.

Turning to the reports of the Interstate Commerce Commission, we find that the average rate per ton per mile for 1890 was .941 cents—that is, nine hundred and forty-one one-thousandths of one cent; for 1900, .729 cents; and for 1905, .766 cents. Although the average rate per ton per mile for 1905 increased one-half of one per cent. over the average rate for 1900, the average rate for 1905 was but 91.2 per cent. of the average for the period from 1890 to 1899. That is, the average for 1905 was 8.8 per cent. lower than the average for the ten-year period.

The Auditor of the Interstate Commerce Commission said to the writer that it is impossible at the present time for the Commission to furnish an adequate, concrete presentation of the variation of rates over any considerable period, to so recent a year as 1905, as affecting the flow of traffic, even of the great staples in the great traffic channels. He stated, however, that the one typical example always cited is that of the grain rates from Chicago to the seaboard.

The various grains and grain products constitute from year to year, as there may be abundance or scarcity of supply, from twenty-five to forty per cent. of the tonnage of the railroads of the United States. The report submitted by the Industrial Com-

mision to Congress in 1901 states that "the competition of carriers and the rivalry of markets, in their constant efforts to control freight movement from grain territory, succeed in steadily lowering railway rates." The diagram accompanying this statement shows that the prices of wheat oscillated between one hundred and thirty-five per cent. in 1867 to sixty-eight per cent. in 1896; of corn, between 116 per cent. and 45 per cent., while railroad rates steadily declined from 105 per cent. to 45 per cent. This report gives table after table showing the declines in grain rates, which, on various roads, have ranged from 25 to 74 per cent. and states that "the American product meets the world's competition in foreign markets on favorable terms and usually with great success, with the result that, because of the cheapness of transportation and the acumen of the grain merchant, the American producer gets very much more for his labor than the inhabitant of any other country on earth." The story is told by these figures:

Wheat	1895	1900	1905
Average price on farm Dec. 1.....	50.9 cts.	61.9 cts.	74.8 cts.
Average price f. o. b. cars Chicago for			
Eastern shipment .....	62.1 "	70.7 "	100.8 "
Rail rates Chicago to New York for export	12.0 "	9.4 "	8.1 "
Average price at New York.....	66.9 "	80.6 "	103.1 "

Competition of the primary markets—St. Paul, Kansas City, Chicago, St. Louis, etc.—keeps up the price to the producer. The competition of carriers and markets keeps down the price to the consumer. Both forces tend to reduce the cost of distribution, including the rate of transportation and the charge for handling.

While the figures based on the Census tables concerning manufactures and agriculture cannot be used as a basis for definite calculation, it is believed that the premises and deductions set forth in this article approach accuracy within a margin of error so small that the conclusions in general are entirely valid. That these conclusions are not in accord with the popular impression of the past few years is no reason for rejecting them, but rather an incentive toward giving them the widest publicity, that the popular impression may be readjusted to facts. That the railroads have been unable to satisfactorily move all of the traffic that has been offered to them during this era of prosperity, and that they have asked for additional capital by the hundreds of millions of dollars, every one knows. The presidents of the railroads have

been telling us that the rate of wages and the prices of commodities have advanced far out of proportion to the rates for transportation, which, in reality, have declined, and that of late the rate of interest on new capital has been increasing. Their statements, which do not seem to have sunk very deeply into the popular mind, are here amply proved by the reports collected and records tabulated by the Government. That the products of agriculture and of manufacture have increased, both in quantity and in value, by leaps and bounds every one knows; but every one does not scrutinize the reports of the railroad companies, which month by month of late have shown that the increases in gross earnings, caused by the enhanced volume of traffic, are often more than offset by the increases in expenses caused by the advance in the prices of everything of which a railroad makes use. Do not the conclusions reached through the foregoing analysis indicate a tendency, while manufactures and agriculture have been nourished and stimulated, toward the impoverishment of the railroads and an impairment in the performance of their functions?

That the wide-spread popular prejudice against the railroads has its cause, or its causes, goes without saying; there is a cause for everything. The piratical practices of speculators have cast a shadow over the entire railroad world, even although the railroad pirates of this day can be counted on the fingers of one hand, and the exposure of their evil practices ever reduces the possibility of their repetition. For one buccaneer in railroad administration there are dozens and hundreds, even thousands, of able, earnest and honest men upon whom the burden of physical and economic conditions that have been of intrinsic extraordinary severity has fallen with the added weight of undeserved public obloquy.

As Secretary Root has recently pointed out, there has been a mighty impetus toward a fuller honesty in the conduct of business. Practices that were easily tolerated a generation ago are now under the ban of public opinion. Rebates that were once vigorously sought by every one who had a pretext for claiming them have been dug up by the roots. The principal shippers of to-day, the men who come in contact with the traffic officers of the railroads and pay the freight bills, have little complaint to make of freight rates. The outcry has been most vociferous from those who have not adjusted their business in accordance with changing economic currents. The outcry has been taken up by

politicians—who do not ship freight or pay freight bills—and their utterances have impressed the great body of the people, who likewise do not to any appreciable extent ship freight or directly pay freight bills. These people have been ignorant of the fact that the freight charges have been in constantly decreasing ratio to the cost of production and the cost of marketing the great commodities of daily need. The freight charge is so low that it is seldom a factor in the retail prices of these commodities. That is, the retail prices of the commodities of daily use, with but few exceptions, are determined without reference to the rate of freight; they would be neither higher nor lower if the commodities were transported by the railroads gratis.

Moreover, there has been general ignorance of the principles that underlie and must underlie the making of rates by the railroads. If every one would read the great authorities upon this subject, Acworth, of England, Fink, Hadley, Taussig and Seligman, in the United States, the clamor against the railroads would dwindle and fade. Indeed this ignorance of the principles that underlie rate-making has been the principal source of popular dissatisfaction.

Arbitrary enforcement of rules and a lack of courtesy on the part of railroad officers and employees in dealing with their patrons have here and there aroused personal resentment that alone has been a large factor in the popular prejudice. On the whole, however, it would seem that the railroads of this country deserve, and at this time peculiarly need, helpful encouragement. They should, at least, have fair play.

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